

Appl. No. 10/629,136  
Amdt. Dated April 4, 2004  
Reply to Office Action of March 3, 2004  
Attorney Docket GT-4751

### **REMARKS/ARGUMENTS**

This Amendment is submitted in response to the Official Letter dated March 3, 2004. Claim 9 is new, Claims 1, 4 and 5 have been amended and Claims 2, 3 and 6-8 are unchanged. Claims 1-9 are pending for examination.

Favorable reconsideration of the application is respectfully requested.

**1. Objection to the Disclosure**

The disclosure is objected to because the specification should be amended to indicate that the parent application 009/1 97,140 is now U.S. Patent 6,615,892. In response, applicant has amended the specification as suggested. Withdrawal of the objection is requested.

**2. Section 112, 2<sup>nd</sup> Paragraph Rejection of Claims 4 and 5**

Claims 4 and 5 stand rejected under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action states:

"Claims 4 and 5 are indefinite because they have abbreviations and it is unclear for what they are abbreviations. It appears the adhesives are thermoplastic polyolefins (TPO) or thermoplastic elastomers (TPE). The claims should be amended accordingly."

Applicant has amended claims 4 and 5 as suggested. Withdrawal of the rejection is respectfully requested.

**3. Section 103(a) Rejection of Claims 1-8**

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hollis (U.S. Patent 4,337,112) in view of McCarville et al (U.S. Patent 4,931,126), Davis et al (U.S. Patent 5,545,685), and the admitted prior art. The Office Action provides as follows:

"Hollis is directed to a method and apparatus for making a composite roofing membrane of indefinite length and a predetermined width. The apparatus contains means for seaming regions of overlapping pieces of EPDM membrane, which are supplied to the apparatus from a single supply roll of uncured EPDM membrane. Hollis also teaches the advantages of having the composite roofing membrane of larger width, which the method and apparatus produces, such as the reduction in cost and application time as a result of covering roofs with larger sheets of EPDM roofing membrane (Column 1, lines 12-67 and Column 10, lines 36-44). The reference does not teach providing a plurality of supply rolls, but rather uses a single supply roll from

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which strips are cut and aligned next to one another in an overlapping manner. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a method with a plurality of supply rolls in view of McCarville et al.

McCarville et al is directed to "a seaming apparatus and method for producing a continuous sheet of thermoplastic material having a predetermined width from a plurality of elongated thermoplastic tapes each having edges defining a transverse width less than the predetermined width and each tape being wound on a roll (Column 2, lines 54-58)." The apparatus contains a plurality of rolls supplying the plurality of tapes, a seaming zone for seaming the individual tapes into a continuous sheet, and a rotating take-up roll for collecting and storing the continuous sheet (Column 2, line 59 to Column 3, line 7).

One skilled in the art would have readily appreciated that it is well known and conventional in the sheet handling art to form a composite sheet with a single supply roll wherein the pieces of sheet are pulled out and cut and then laterally moved to overlap another cut sheet and seamed together as taught in Hollis or to form a composite sheet with a plurality of supply rolls arranged so that the sheets are pulled out in an overlapping manner and seamed together as taught in McCarville et al. The two methods are alternative expedients, obvious over one another. It would have been within the purview of one skilled in the art to determine which method to utilize for forming a composite roofing membrane of indefinite length and a predetermined width. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a plurality of rolls of EPDM membrane, to simultaneously feed the EPDM membranes in a first direction wherein the edges of the EPDM membranes are in overlapping relationship, and to seam the overlapping edges together to form a composite roofing membrane in the method of Hollis, as suggested in McCarville et al.

Hollis does not teach supplying cured EPDM to form the composite.

The admitted prior art states that it is known to "splice cured sheets of EPDM roofing membrane together" which overlap on a roof. It is noted that it is stated the cured sheets were spliced together, but the procedure for splicing the sheets is not mentioned, merely that they were spliced together and that the adhesion is poor (Specification, page 1, lines 14-26).

Davis et al is directed to a method for bonding cured EPDM membranes together. Davis et al teach that it is well known and conventional to use cured EPDM membranes for covering roofs and that it is necessary to form a seam in the areas of overlapping cured EPDM roof sheeting (Column 1, lines 35-55). The reference also teaches that it is known to apply adhesive between the overlapping cured EPDM roofing sheets and that it is often necessary to apply heat and pressure to obtain good adhesion (Column 2, lines 19-39).

Hollis teaches it is known to seam together pieces of uncured EPDM sheets and the admitted prior art and Davis et al teach it is known to seam together pieces of cured EPDM membrane. It is also noted that the composite sheet formed in Hollis would need to be cured before being utilized to cover a roof, which is its intended purpose. One of ordinary skill in the art would recognize that since it is known to seam overlapping pieces of cured EPDM membrane and that a composite sheet of

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uncured EPDM roofing membrane needs to be cured before covering a roof. One skilled in the art would have readily appreciated that there are two options for forming a composite roofing sheet utilizing the apparatus of Hollis, as modified above. The first is to seam together sheets of uncured EPDM membrane with the apparatus and the composite sheet is then cured and utilized in covering a roof. The second option is to cure the EPDM membrane first and supply the cured EPDM to the apparatus to seam the sheets of cured EPDM membrane together, seaming cured EPDM membrane together being well known as taught by Davis et al and the admitted prior art. The composite sheet of cured EPDM roofing membrane is then applied to a roof. It would have been within the purview of one skilled in the art to determine which option is the most efficient. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a plurality of rolls of EPDM membrane, to simultaneously feed the EPDM membranes in a first direction wherein the edges of the EPDM membranes are in overlapping relationship, and to seam the overlapping edges together to form a composite roofing membrane in the method of Hollis, as suggested in McCarville et al and for the rolls of EPDM membrane to already be cured, as suggested in the admitted prior art and Davis.

Regarding claims 2-3, Davis teaches bonding the cured EPDM membranes with adhesive and one skilled in the art would have readily appreciated that the adhesive is either applied before or after overlapping and that the two are alternate expedients obvious over one another. It would have been obvious to do either.

Regarding claims 4-5, Davis teaches the adhesive can be TPO or TPE (See Column 4, line 63 to Column 5, line 35).

Regarding claims 6-7, Hollis teaches seaming under heat and pressure and Davis teaches seaming the cured EPDM membranes together with adhesive under heat and pressure.

Regarding claim 8, one skilled in the art would have readily appreciated cutting the cured EPDM membrane to a desired length in order to have a composite roofing membrane of a desired length and it would have been obvious to do so."

To establish a prima facie case of obviousness, the Patent Office has enumerated three criteria that must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See also MPEP 2143.

It is respectfully submitted that the Office Action does not meet the criteria for establishing a prima facie case of obviousness.

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Hollis appears to disclose an apparatus and method for making a composite sheet of indefinite length and very large predetermined width from indefinite length sheet stock of relatively small width. Included is a supply roll of relatively narrow indefinite length synthetic rubber sheet material, and a conveyor which feeds out in a *horizontal direction* past a cutter a sheet of the narrow stock equal in length to the relatively large width of the desired composite sheet stock. After feeding out and cutting the desired length of narrow stock, the *cut sheet is transferred laterally*, i.e., in a different direction, by a reciprocating vacuum pick-head to overlap the leading edge thereof with the trailing edge of the preceding laterally shifted cut sheet, effectively augmenting the composite sheet. A conveyor advances the composite sheet in the *transverse direction* to successively locate the lap joints thereon at a lap joint pressing station where at the lap joints are successively pressed to enhance the permanency of the joints. The composite sheet is then fed through a release powder applicator that applies release powder to both sides of the sheet to avoid the composite sheet stock, which is *uncured*, from sticking together when stored in roll form. Downstream of the release powder applicator the composite sheet is fed through a variable tension regulator, a sheet slitter which trims the stock to the desired width, and a composite sheet reeling station where it is rolled on a mandrel for subsequent storage and curing. Intermediate the supply roll of narrow length stock and the sheet cutter a station is located for facilitating convenient removal of defective portions of the narrow width supply stock.

Hollis does not teach or suggest the steps of feeding the panels from the at two rolls in a first direction and simultaneously positioning the edges of the cured panels in an overlapping relationship as the panels are fed in the first direction. Hollis teaches using a single mandrel, cutting sheets from the single mandrel, transferring the sheets *laterally*, i.e., in a different direction, joining the sheets, and then reeling the combined sheets on a mandrel. Clearly, Hollis does not teach or suggest the method as claimed.

Hollis also teaches that the sheets are of uncured material. It will be appreciated that because the sheets are of uncured material a release powder must be used to prevent the sheets from sticking together.

Hollis teaches that the sheets are first cut from the single madrel then transferred laterally to overlap the leading edge thereof with the trailing edge of a preceding laterally shifted cut sheet. A conveyor advances the composite sheet in the transverse direction to

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successively locate the lap joints thereon at a lap joint pressing station whereat the lap joints are successively pressed to enhance the permanency of the joints. Hollis does not teach the method of providing two rolls of cured EPDM membrane, feeding the membrane from the rolls in a first direction, positioning the edges of the membrane in overlapping relationship as the membrane is fed in the first direction and seaming the cured edges to form a composite.

Hollis teaches that each lap joint is successively pressed in the lap joint pressing station. In contrast, the present invention as claimed specifies that the overlapping edges of the EPDM membrane are continuously seamed to form a composite roofing membrane. Hollis does not teach that the supplied sheets are continuously seamed as claimed.

It will be appreciated that the method of Hollis requires the completion of discrete steps before proceeding to the next step. In contrast, the method of the present invention as claimed involves the continuous seaming and formation of wide panels of cured EPDM membrane without the completion of discrete steps thereby ensuring that the process of making large width EPDM membrane is continuous and simple.

To overcome the deficiencies of Hollis the Examiner has relied upon the teachings of McCarville.

McCarville appears to disclose a method for producing a continuous sheet of thermoplastic material having a predetermined width from a plurality of elongated thermoplastic tapes each having edges defining a transverse width less than the predetermined width and each tape being wound on a roll. The seaming apparatus includes a frame having a seaming zone. A feed device is mounted on the frame for rotatably supporting a plurality of rolls in a predetermined staggered relationship. An alignment mechanism is mounted on the frame for receiving the tapes from rolls thereof supported by the feed device and for guiding the tapes into the seaming zones along paths defining a predetermined transversely adjacent relationship when the edges of the tapes position adjacent one another form a contiguous area. Thermal heating elements are provided in the seaming zone for thermally joining the contiguous area of the tapes to form the contiguous sheet of thermoplastic material. A take-up roll is rotatably mounted on the frame for receiving the continuous sheet of thermoplastic material from the seaming zone.

Initially, it is noted that McCarville is directed toward combining thermoplastic materials. The present invention as claimed is directed toward combining thermoset

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materials, i.e., EPDM material. The EPDM material that is combined is already cured. McCarville does not teach or suggest combining cured EPDM.

Furthermore, McCarville teaches that the rolls are in staggered alignment. See col. 4, lines 38 et seq., and Figs. 4 and 5. Consequently, an alignment means 30 must be used to control and monitor the location of the edges 66 of each tape 20. The present invention as claimed includes positioning the marginal edges of cured EPDM membrane in an overlapping relationship. Clearly, McCarville does not teach or suggest the step of positioning marginal edges of the cured panels of EPDM in an overlapping relationship as claimed.

In addition, McCarville teaches the use of pneumatic cylinders disposed in the seaming zone to selectively apply pressure through flat seaming heads to effect joining of the tape. The present invention as claimed includes the step of continuously seaming the overlapping cured edges to form a continuous seam. McCarville also does not teach or suggest a continuous seaming process as claimed.

In regard to the admitted prior art, it is well known to those skilled in the art that roofing material is typically obtained in individual rolls and is then rolled on the roof deck in strips running the length of the building with a slight overlap between adjacent rolls. The overlapping edge of two rolls are then individually successively adhered until all of the overlapping edges are adhered to form a composite roofing membrane. The prior art adds nothing to either Hollis or McCarville. The problems and disadvantages inherent in the prior art are the incentive for the inventors to search for a better apparatus and method for continuously combining cured EPDM to form large width membranes that does not require individually successively adhering individual rolls in the field.

Davis adds nothing to McCarville or Hollis. Davis merely appears to disclose an adhesive tape composition including a polymer blend comprising at least one EPDM rubber, and preferably three EPDM rubbers in substantially equal amounts, and an adhesive-enhancing polymer selected from the group consisting of polyisoprene, polybutadiene, and ethylene-propylene copolymer and mixtures thereof. A method is also provided for covering roofs which includes the step of employing the adhesive tape composition. Davis does not teach or suggest the invention as claimed including providing at least two rolls of wide panels of cured EPDM membrane having longitudinal marginal edges; feeding the wide panels of cured EPDM membrane from the at least two rolls in a first direction; simultaneously

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positioning longitudinal marginal edges of the cured wide panels of EPDM membrane in an overlapping relationship as the cured wide panels of EPDM membrane are fed in the first direction; and continuously seaming the overlapping cured edges of the EPDM membranes to form a composite roofing membrane.

Accordingly, none of the applied references teach or suggest all the features recited in the claims such that a prima facie case of obviousness is found. For at least these reasons, Claim 1 is allowable over the applied art.

Regarding claims 2-3, 4-5, 6-7 and 8, these claims depend from and further define claim 1 and are likewise allowable over the applied art for at least the same reasons described above. Withdrawal of the rejections is respectfully requested.

In summary, none of the applied references teach or suggest all the features recited in the claims such that a prima facie case of obviousness is found.

In regard to new claim 9, claim 9 has been added to track the claims as allowed and directed to the apparatus. It is believed that claim 9 is allowable for at least the same reasons described by the Board of Appeals in their decision dated March 20, 2003.

4. **Request For Telephone Interview**

As a final matter, if the Examiner has any suggestions concerning different claim phraseology that, in the opinion of the Examiner, more accurately defines the present invention, prior to issuance of another Office Action, Applicant's undersigned attorney requests the courtesy of a telephone interview at the Examiner's earliest convenience to discuss the application. Applicant's undersigned attorney may be contacted at (724) 712-3141.

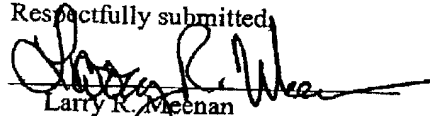
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5. Conclusion

In view of the amendments and above remarks, it is believed that the application is in condition for allowance. Accordingly, an early Notice Of Allowance is respectfully requested.

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Respectfully submitted,

  
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